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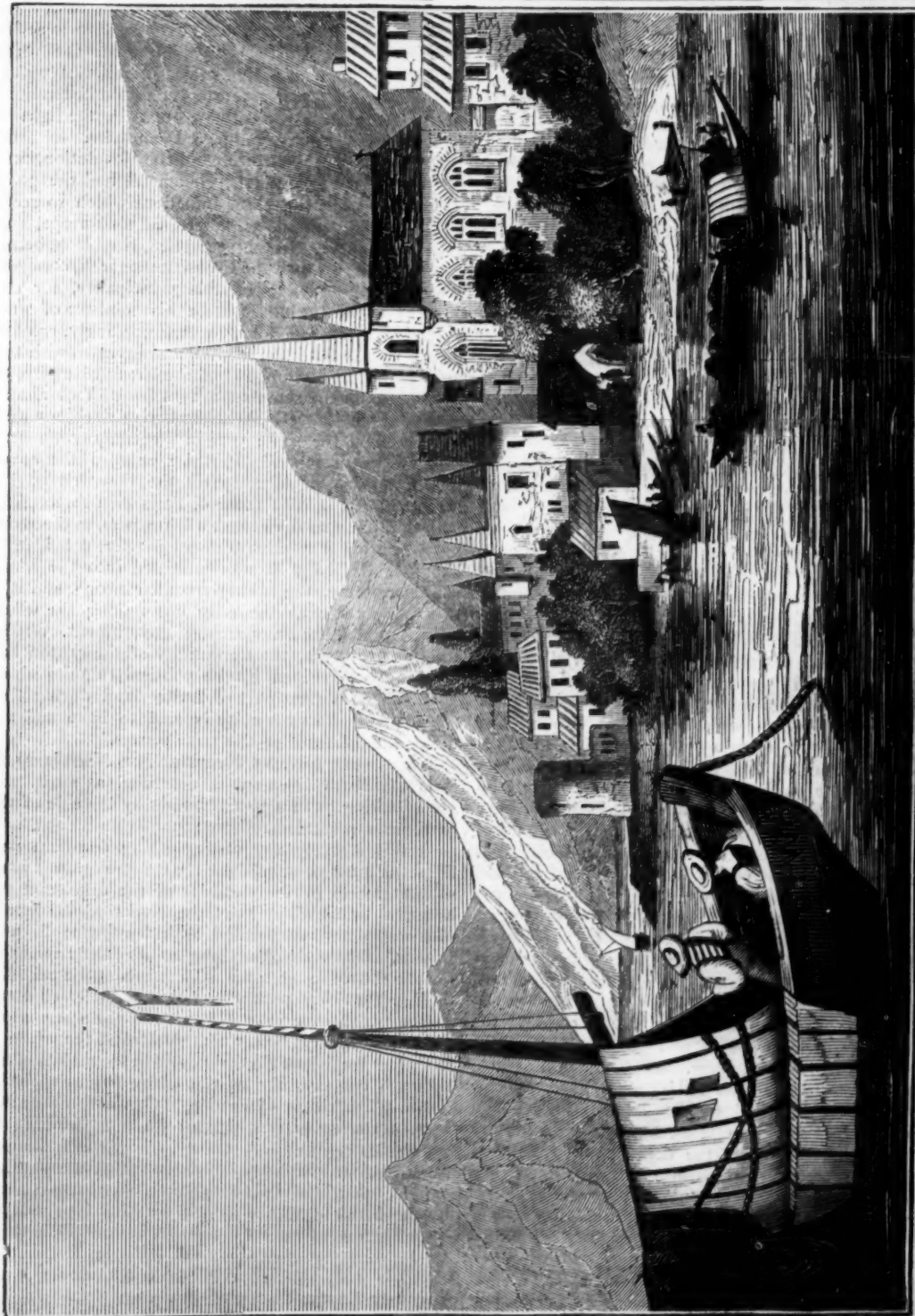
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LANDING-PLACE AND CHURCH OF ST. PETER, AT NEUCHÂTEL.

THE TOWN OF NEUCHÂTEL, IN SWITZERLAND.

NEUCHÂTEL, or Neufchâtel, the capital of the Prussian principality, and of the Swiss canton of the same name, is one of the most interesting towns in Switzerland. It stands close to the lake of Neuchâtel, and is watered by the little river Seyon, a sort of noisy mountain torrent which rises among the hills of the Jura, in the district called the Val de Ruz, and empties itself into the lake, after a short but impetuous course. This stream is always a rapid one, but it not unfrequently assumes a character of violence which occasions extensive devastations in the country through which it passes. The town is seated partly in the little plain between the Jura and the lake, and partly on the declivity of the mountain. The country around it is described as very pleasing.

The town of Neuchâtel is of considerable antiquity, though the precise period of its foundation is not satisfactorily ascertained. In several ancient documents, it bears the Latin name of *Novum Castrum*, which has precisely the same meaning as Neuchâtel, or Neuf-châtel, both signifying "New Castle;" and some suppose it, accordingly, to have sprung from a fortress erected by the Romans, to defend themselves against the attacks of the Helvetic nation. In the middle ages, this town became a part of the principality of Neuchâtel,—its capital, indeed, and seat of government, as it were. It followed, accordingly, the fortunes of that territory, and passed with it into the hands of the various masters by whom it was held. The principality of Neuchâtel was not at first so extensive as it afterwards became. The principality of Vallengin, which was subsequently united to it, and which it now includes, was for a long while a separate sovereignty. These two principalities, with their fruitful valleys extending along the lake of Neuchâtel, and amongst the mountains of the Jura, belonged anciently to the kingdom of Burgundy, and were afterwards appended to the German Empire, in the eleventh century. The Counts of Neuchâtel, who resided in a castle on the borders of the lake, granted extensive privileges to all who settled in their uncultivated mountains, and cleared the impenetrable forests. In this manner the country was peopled; and, by degrees, around the castle, the modern town sprung up, which, in 1214, was invested with considerable privileges.

Towards the close of the thirteenth century, the reigning lord ceded his seignury to the Emperor Rudolf of Hapsburg, from whom it passed to the Burgundian house of Chalons. Two centuries afterwards it became vested in the hands of the old French family of Longueville, which became extinct in 1707, by the death of Mary, Duchess of Nemours. Above twenty claimants at once presented themselves as heirs to this beautiful principality; and the assembly of the three estates, the supreme court of judicature, composed of twelve judges, having examined the pretensions of the different claimants, declared Frederick the First of Prussia to be the next heir to the house of Chalons. That monarch at once confirmed the constitution and liberties of the country, as defined by the articles which had been previously drawn up by the three estates, and subscribed to by all the claimants before the decision; and he proceeded thenceforward to exercise his rights, through a governor and council of state, all whose members were chosen from among the citizens. His predecessors, the lords of Neuchâtel, had always maintained a treaty of alliance with either Berne, Soleure, Lucerne, or Fribourg, since the year 1307, as had also the town itself, as well as the other towns, and

many of the independent communes of the country. They had acquired, in consequence, the protection of the entire confederacy. The Prussian king succeeded to this protection: from the period of his election, he was considered "an ally" of the confederates; his principality being reckoned amongst the number of what were termed the *allied districts* of Switzerland.

We may here remind our readers, that, until the period of the changes induced by the French Revolution, the country called by the general name of Switzerland, consisted of three distinct classes of political divisions; namely, the thirteen confederated cantons, the districts which were under the protection of the confederation, and called "allies," in a sense expressive of a closer connection than the term usually denotes; and the subject territories which belonged to the different cantons of the confederation, and stood to their respective owners in the light of what they really were, conquered countries.

During the turbulent times of the Revolution, and the wars which followed it, Neuchâtel had the good fortune to escape the bitter inflictions which so great a part of Switzerland, as, indeed, of all Europe, was doomed to suffer. In the year 1806, Napoleon, being upon good terms with the Prussian monarch, obtained from him the cession of this principality, for the purpose of bestowing it upon his minister of war, Berthier. That functionary was, accordingly, created Prince and Duke of Neuchâtel, and invested with the principality, as a grand fief of the French Empire, to be held upon the same tenure as Soult, Victor, and other French Generals, held the twelve duchies which were created the same year in the conqueror's new "Kingdom of Italy." Berthier enjoyed the sovereignty of his principality till the downfall of his master in 1814. The peace of Paris then restored it, with additions, to the Prussian King, who, in the same year, granted it a constitutional charter, dated from London. In 1822 it was admitted into the Swiss confederation as the twenty-second canton; and it is now remarkable as the only one among the whole number which has a monarchical government. Within the last five years, the tranquillity of the canton has been much disturbed by the political tumults which have shaken a great part of Switzerland during that period; and its prosperity is said to have suffered under the influence of the same causes.

The existing town of Neuchâtel, or *Neuenbourg*, as it is styled in German, is described as small and good-looking, with a pleasant walk by the side of the lake, and several handsome public buildings. It possesses scarcely any distinguishing features: perhaps the most characteristic are the steepness of some of the streets in the declivity of the Jura, and the beautiful walks which skirt the banks of the lake—some of them ornamented with handsome lines of houses. The style of architecture is chiefly modern; for the town has so often suffered from the calamity of fire, that few portions of it can boast of much antiquity. In the year 1714, it was the scene of an extensive conflagration, which destroyed the whole of the street leading to the castle, and in the middle of the fifteenth century, almost the entire town was burnt down. The rising of the impetuous Seyon has also been a source of destruction: an inundation of its waters, in the year 1579, reduced a large space of buildings to ruins. To these injuries, arising from physical causes, must be added those which have been inflicted by the hand of war,—though, fortunately, the latter have been confined to the earlier ages of its history. In 1033, it was sacked by the Emperor Conrad the Second; and, two hundred years afterwards, it was burnt by Henry, Bishop of Basle.

The castle is the most remarkable among the public buildings. It is a vast building, which used to be the residence of the ancient Counts of Neuchâtel, before the principality passed into the hands of the Prussian sovereign. It is now appropriated to the service of the governor, appointed by that monarch to act as his deputy. It stands finely, upon a height overlooking the town; the ascent to it is by stone steps, some of which are cut in the solid rock. The view which this antique chateau commands, in its elevated position over the lake, is extensive and beautiful:—"One, which the reader may fancy," says Simond, "better than I can describe. The lime-trees in its terrace are very large; one of them measures eighteen feet in circumference, five feet above ground, and nearly double below. Numerous fountains, ceaselessly pouring their limpid streams into large stone basins, are, besides their convenience and beauty, a species of living records of the taste and manners of past ages,—being generally ornamented with colossal representations of Swiss warriors of the fifteenth century, clad in steel, with wasp shapes, and stuffed breasts, wearing on the head diminutive caps, which strangely contrast with their vast exuberance of beard, and stern countenances."

By the side of the castle is the cathedral, said to have been built in 1164, and chiefly remarkable for a series of statues, erected by Count Louis, in 1373, as monuments of nine Counts and four Countesses of Neuchâtel. In front of this edifice, stands an object of considerable interest—the sepulchral stone of William Farel, who brought about the establishment of the reformed religion in the principality of Neuchâtel. This distinguished individual,—the companion and fellow-labourer of Calvin,—was by birth a Frenchman; and, to this circumstance, he is said to have been, in some measure, indebted for the success which attended his preaching,—as the French language is almost universally spoken throughout the canton. There is, or at least used to be, upon one of the walls of the cathedral, an inscription to the following effect, marking the precise period at which the Reformation became triumphant in this town:—"On the 23rd of October, 1530, idolatry was abolished, and removed from within here, by the citizens." The new church was built in the year 1695; and there is also a town-house.

Much of the embellishment and prosperity of the town are owing to the public spirit and patriotism of two of its citizens. One of them, M. David Pury, was born in 1709; and, having received his education in his native town, is said to have quitted it in great poverty. He passed an apprenticeship in some trade at Geneva, and then repaired to London, where he resided some time in the capacity of clerk to an eminent jeweller. He subsequently established himself in Lisbon; and being appointed court banker, soon became possessed of great wealth. In this city he died in the year 1786. During his life-time, he remitted large sums of money to his native town; and, upon his death, having none but very distant relations, made his country heir to the great bulk of his fortune. Nearly one hundred and sixty thousand pounds British, was bequeathed to the citizens of Neuchâtel,—to be applied to purposes of education,—to the augmentation of the stipends of clergymen and their widows,—to the support of the aged poor,—to the construction of a town-house, an infirmary, and other public establishments,—to the improvement of the public walks,—in short, to all objects of general utility. The amount of his benefactions, during his life-time, was nearly thirty thousand pounds; and for fifteen years, he had given one hundred pounds

annually to the poor of each of the towns of Neuchâtel and Vallengin; a considerable sum, when we bear in mind that the larger of them had then a population of only 3000. The whole amount of his benefactions to his native town does not fall far short of two hundred thousand pounds. The other individual is M. de Pourtales, who, in 1807, gave upwards of twenty thousand pounds for the establishment of a noble hospital; the utility of which has been amply shown: in 1814 it was filled with sick soldiers, and in the years 1813 and 1815, it received 269 and 312 patients, respectively.

At the commencement of the last century, Coxé tells us that commerce was almost wholly unknown in this town, as the ridiculous pride of deeming it to be degrading, generally prevailed among the inhabitants. This senseless prejudice was nearly extinguished when he wrote (in 1786); at present it has entirely vanished, and the town is now the centre of the whole trade of the canton.

The land is generally fertile, though the corn which is produced throughout the principality is by no means sufficient for the subsistence of its inhabitants, the population being so great in reference to the surface. Wine, fruits, hemp, and flax, are produced and exported in considerable quantities; but the manufactures of the town and canton are the chief source of prosperity to both. They are principally lace, linen, cotton, chintzes, and other printed goods, cutlery, philosophical instruments, and watches. The number of watches annually made in this canton has been estimated at 130,000, which are exported into Germany, Italy, Spain, Turkey, and even America. The artisans employed in the preparation of these instruments, have been stated at between three and four thousand.

The villages of La Chaux, De Fond, and Locle are the principal seats of the manufacture; and Coxé dwells with pleasure upon the genius and industry which their inhabitants exhibited fifty years ago. "They carry on," he says, "an extensive commerce in lace, stockings, cutlery, and other merchandize of their own manufacture; but watch-making, and every branch of clock-work, are the articles in which they particularly excel. They not only make every utensil employed in those arts, but have invented several; and all sorts of workmen necessary for the completion of that branch of business, such as painters, enamellers, engravers, and gilders, are found in these villages*."

The prosperous and happy condition always enjoyed by the town and canton of Neuchâtel, have sometimes occasioned in the mind of the observant traveller, a comparison with other parts of Switzerland which are inhabited by a Catholic population, and which have always been equally remarkable for the poverty and ignorance prevailing therein. Malte-Brun asks to what causes can this wealth and activity be attributed? "Is it," he inquires, "to that turn of mind which led the inhabitants to adopt, by a plurality of voices, the Reformation preached to them by Farel?"

* See *Saturday Magazine*, Vol. V., p. 62., for an account of the introduction of watch-making into the canton of Neuchâtel.

A PROFESSOR in one of the German Universities, whose unconcern for religion in general was notorious, was not less remarkable for the care which he took in the religious instruction of his children. One of his friends, astonished at this inconsistency, and asking him the reason of this conduct, was told in reply, "It is because I wish my children may enjoy more peace of mind, and more content in this life, than has ever fallen to my lot; and this they can only obtain by possessing more faith than myself."

THE WHITE POPPY—OPIUM—AND OPIUM-EATERS.



THE WHITE POPPY, (*Papaver somniferum*.)

THE milky juice found in many plants,—as, for instance, in the poppy, the lettuce, the dandelion, and others,—has long been known for its soporific effects. This narcotic principle has been found to exist more particularly in the juice of the white poppy, from which is prepared the Opium of commerce. Laudanum, which is a solution of Opium in spirits, is well known, both for its beneficial effects when carefully administered, and for its fatal results in the hands of ignorance or wickedness.

The Poppy is cultivated to a great extent, for the purpose of extracting the Opium, in many parts of Asia, and even in the southern countries of Europe. In India, the cultivation is confined to certain districts, and is carried on for the benefit of the government. The greatest part of the crops of Hindostan are carried to China, and smuggled into that country, in spite of the regulations which forbid its importation; for even the functionaries appointed to exclude the drug are as anxious as others to obtain it. This desire for Opium, on the part of the Chinese, arises from a pernicious habit prevalent among them, of smoking it, and of swallowing it in the shape of pills, for the purpose of producing a species of intoxication.

The mode of culture in India is as follows:—The field being well prepared by the plough and harrow, is divided into small beds, seven feet long, and five wide; the spaces between being formed into channels, for the purpose of conveying water to the different parts of the field. The seeds are sown in October or November; the plants are allowed to grow six or eight inches from each other, and are plentifully supplied with water, till about eight inches high, when they are watered more sparingly. As they are about to come into blossom, the quantity of water is increased, and manure, and a large portion of nitrous

earth, are strewed over the beds. When the seed-pods are half grown, no more water is given, and the cultivators begin to collect opium. At sunset they make two incisions in each pod, passing from below upwards, taking care not to penetrate the cavity of the capsule. The incisions are repeated every evening, until the capsules have received six or eight wounds: they are then allowed to ripen their seeds.



TWO-EDGED LANCET FOR PIERCING THE CAPSULES.

Early in the morning, the juice which has trickled from the wounds, is scraped off by women and children with a small scoop; it is then placed in an earthen pot, and allowed to become sufficiently hard to be formed into globular masses of about four pounds' weight. These cakes are covered over with leaves, and dried, until they are fit for sale.

The poppy is a very hardy plant, and in most climates can be sown either in the Spring, or the Autumn, as it stands the cold weather tolerably well. It will not bear transplanting; and must, consequently, be sown more thickly than it is intended to grow, and afterwards be thinned out.

Modern chemistry has succeeded in extracting the narcotic principle from crude Opium, in the form of a white crystallized substance, which is called Morphium. Small doses of this are now frequently administered, instead of larger quantities of Laudanum or Opium.

The seeds of the poppy yield, by expression, an excellent oil, equal, for the purposes of cookery, to the best olive oil, and possessing none of the properties of opium itself, which appears to reside only in the milky juices of the plant. In Europe, although the poppy is cultivated to a considerable extent, it is chiefly for the sake of the seeds, and of the dry seed-pods, which are used in medicine.

The destructive habit of taking large doses of Opium, to produce a sort of temporary intoxication, prevails to a great extent in Eastern countries, particularly among the Turks. The effects are to be daily witnessed in Constantinople; where the miserable beings addicted to this vice may be seen assembled in some favourite house, enjoying their deadly luxury.

"I had heard so much of the sensations produced by this drug," says Dr. Madden, "that I resolved to know the truth; and accordingly took my seat in the coffee-house, with half a dozen Theriakis. Their gestures were frightful: those who were completely under the influence of the opium, talked incoherently; their features were flushed, their eyes had an unnatural brilliancy, and the general expression of their countenances was horribly wild. The effect is usually produced in two hours, and lasts four or five; the dose varies from three grains to a drachm. I saw one old man take four pills, of six grains each, in the course of two hours. I was told he had been using opium for five-and-twenty years; but this is a very rare example, as an opium-eater seldom passes thirty years of age, if he commences the practice early. The debility, both moral and physical, attendant on its excitement, is terrible; the appetite is soon destroyed, every fibre in the body trembles, the nerves of the neck become affected, and the muscles get rigid. Several of those I have seen in this place, at various times, had wry necks and contracted fingers; but still they cannot abandon the habit. They are miserable till the hour arrives for taking their daily dose; and when its influence begins, they are all fire

and animation. Some of them compose verses, and others address the by-standers in eloquent discourses, imagining themselves to be emperors, and to have all the world at their command.

"I commenced with one grain: in the course of an hour and a half it produced no perceptible effect. The coffee-house keeper was very anxious to give me an additional pill of two grains, but I was contented with half a one; and in another half an hour, feeling nothing of the expected reverie, I took half a grain more, making two grains in the course of two hours. After two hours and a half from the first dose, I took two grains more, and shortly after this dose, my spirits became sensibly excited. The pleasure of the sensation seemed to depend on a universal expansion of mind and matter; my faculties appeared enlarged; every thing I looked on seemed increased in volume; but I had no longer the same pleasure when I closed my eyes, which I had when they were open. I made my way home as fast as possible, dreading at every step I should commit some extravagance. I was hardly sensible my feet touched the ground; and I got to bed the moment I reached home. The most extraordinary visions of delight filled my brain all night. In the morning I rose, pale and dispirited; my head ached; and my body was so debilitated, that I was obliged to remain on the sofa all the day, dearly paying for my first essay at opium eating."

The following description is from Hope's *Anastasis*, which, although a work of fiction, contains, in its descriptive scenes, correct and vivid representations of the manners of the East.

"The great mart of that deleterious drug, is the Theriakée Tchartchee. There, in elegant coffee-houses, adorned with trellised awnings, the dose of delusion is measured out to each customer according to his wishes. But, lest its visitors should forget to what place they are hieing, directly facing its painted porticoes stands the great receptacle of mental imbecility, erected by Sultan Suleiman for the use of his capital.

"In this Tchartchee might be seen, any day, a numerous collection of those whom private sorrows have driven to a public exhibition of insanity. There, each reeling idiot might take his neighbour by the hand and say, 'Brother, and what ailed thee, to seek so dire a cure?' There did I, with the rest of its familiars, now take my habitual station in my solitary niche, like an insensible, motionless idol, sitting with sightless eyeballs, staring on vacuity.

"One day, as I lay in less entire absence of mind than usual, under the purple vines of the porch, admiring the gold-tipped domes of the majestic Sulimanye, the appearance of an old man, with a snow-white beard, reclining on the couch beside me, caught my attention. Half-plunged in stupor, he every now and then burst out into a wild laugh, occasioned by the grotesque phantasms which the ample dose he had swallowed was sending up into his brain. I sat contemplating him with mixed curiosity and dismay, when, as if for a moment roused from his torpor, he took me by the hand, and fixing on my countenance his dim, vacant eyes, said, in an impressive tone, 'Young man, thy days are yet few: take the advice of one, who, alas, has counted many. Lose no time; hie thee hence, nor cast behind one lingering look: but if thou hast not the strength, why tarry, even here? Thy journey is but half achieved. At once go on to that large mansion before thee. It is thy ultimate destination; and by thus beginning where thou must end at last, thou mayest at least save both thy time and thy money.'"

THE AURORA BOREALIS.

I HAVE stood at morn on the mountain's side,
When 'twas bright as morn may be,
And have lov'd to behold the sun in his pride
Of orient majesty.

I have watched him at noon, in unclouded blaze,
When, one living orb of light,
With unshaded heat, and fiery rays,
He burst on the dazzled sight.

I have seen him sink 'neath the western sky
And ride on the dark-blue wave,
When, with mild effulgence, he charm'd the eye,
And glad feelings of rapture gave.

And I love in the stillness of evening to rove,
And gaze on the starry sky,
Where bright bands in mysterious music move,
And I feel their melody.

But, in glory surpassing, a sight was there,
When the brilliant meteor's light
Illumin'd the regions of upper air,
'Mid the silent hour of night.

When, in liquid course, those flashes of flame
O'er the dazzled sky were driven,
Outshining the stars, as they onward came,
And crimson'd the face of heaven.

When, in many a shape and many a form,
Those spires of flame shot fast
As the spirit that rides on the whirlwind's storm,
And the steeds of the rushing blast.

Faint type of those all-dreaded glaring fires
That shall rage in future days,
When the loud-sounding trump, from earth's funeral pyres
The mouldering dead shall raise.

And O! on that dawn of eternity,
May we seek that radiant shore,
Where the tear shall be wiped from every eye,
And sorrow be heard no more.

R. C. P.

THE famous astronomer, Kirchner, having a friend who denied the existence of a supreme Being, took the following method to convince him of his error. Expecting him upon a visit, he procured a very handsome globe of the starry heavens, which, being placed in a situation where it could not fail to escape his friend's observation, the latter seized the first occasion to ask whence it came, and to whom it belonged. "It does not belong to me," said Kirchner, "nor was it ever made by any person; but it came here by mere chance!" "This," replied his sceptical friend, "is absolutely impossible: you surely jest." Kirchner, however, seriously persisting in his assertion, took occasion to reason with his friend upon his own atheistical principles. "You will not," said he, "believe that this small body originated in mere chance; and yet you would contend that those heavenly bodies, of which it is only a faint and diminutive resemblance, came into existence without order and design!" His friend was at first confounded,—afterwards, when Kirchner pursued his reasoning, convinced; and ultimately joined in a cordial acknowledgment of the absurdity of denying the existence of a God.

THERE are few instances, I believe, to be met with, in any situation, of a regular and supported conduct, without the aid of Religion. This is necessary to fill up and quicken those dull intervals which happen in the busiest life, and to preserve a retired one from a total stagnation. It is Religion which must plant in the soul that motive principle, which will display itself in a useful course of employment, whatever be the circumstances in which we are placed, like a perennial Spring, that still sends forth a pure and salubrious stream, notwithstanding every alteration of weather or vicissitude of seasons.

The activity of man, as a rational being, depends chiefly on the end he has in view. Now the end presented to him by Religion, is of the most excellent and interesting nature, and, if duly apprehended, will always command a vigorous exercise of his moral and intellectual powers; and thus furnish him with the noblest occupation, even in the midst of a desert. He who is fully conscious that he has a soul to save, and an eternity to secure, and, still further, to animate his endeavours, that God and angels are the spectators of his conduct, can never want motives for exertion in the most sequestered solitude.—BATES.

AIR, EARTH, AND WATER.

[Extracted from a conference betwixt an ANGLER, a HUNTER, and a FALCONER; each commending his recreation, and, consequently, the element in which each is carried on.]

THE Air is an element of more worth than weight,—an element that doubtless exceeds both the earth and water. The worth of it is such, and it is of such necessity, that no creature whatsoever, not only those numerous creatures that feed on the face of the earth, but those various creatures that have their dwelling within the waters,—every creature that hath life in its nostrils, stands in need of this element. The waters cannot preserve the fish without air,—witness the not breaking of ice in an extreme frost: the reason is, that, if the inspiring and expiring organ of any animal be stopped, it suddenly yields to nature, and dies. Thus necessary is air to the existence both of fish and beasts, nay, even to man himself: that air, or breath of life, with which God at first inspired mankind, he, if he wants it, dies presently, becomes a sad object to all that loved and beheld him, and in an instant turns to putrefaction. Nay, more; the very birds of the air are both so many and so useful, and pleasant to mankind, that they must not pass without some observations. They both feed and refresh him; feed him with their choice bodies, and refresh him with their heavenly voices.

As first, of these latter, the lark, when she means to rejoice, to cheer herself, and those that hear her,—she then quits the earth, and sings as she ascends higher into the air; and, having ended her heavenly employment, grows then mute and sad, to think she must descend to the dull earth, which she would not touch but for necessity.

How do the black-bird and thrassel, with their melodious voices, bid welcome to the cheerful Spring, and, in their fixed months, warble forth such ditties as no art or instrument can reach to.

Nay, the smaller birds also do the like in their particular seasons; as namely, the leverock, the tit-lark, the little linnet, and the honest robin, that loves mankind, both alive and dead.

But the nightingale, another of these airy creatures, breathes such sweet, loud music, out of her little instrumental throat, that it might make mankind to think miracles are not ceased. He that at midnight, when the very labourer sleeps securely, should hear the clear airs, the sweet descents, the natural rising and falling, the doubling and redoubling of her voice, might well be lifted above earth, and say, "Lord, what music hast thou provided for the saints in Heaven, when thou affordest bad men such music on earth!"

This for the birds of pleasure, of which very much more might be said. My next shall be of birds of political use. Swallows have been taught to carry letters between two armies; and when the Turks besieged Malta, or Rhodes, pigeons are then related to carry and recarry letters; and Mr. G. Sandys relates it to be done betwixt Aleppo and Babylon. But if that be disbelieved, it is not to be doubted that the dove was sent out of the ark, by Noah, to give him notice of land, when to him all appeared to be sea; and the dove proved a faithful and comfortable messenger. And for the sacrifices of the law, a pair of turtle-doves, or young pigeons, were as well accepted as costly bulls and rams. And when God would feed the prophet Elijah, after a kind of miraculous manner, he did it by ravens, who brought him meat morning and evening. Lastly, the Holy Ghost, when he descended visibly upon our Saviour, did it by assuming the shape of a dove. And pray remember these wonders were done by birds of the air, the element in which they take so much pleasure.

There is also a little, contemptible, winged creature, an inhabitant of this aerial element; namely, the laborious bee, of whose prudence, policy, and regular government of their own commonwealth, much might be said; as also of their several kinds, and how useful their honey and wax are, both for meat and medicine, to mankind: but we will leave them to their sweet labour, without the least disturbance.

The Earth is a solid, settled element; an element most universally beneficial, both to man and beast. The earth feeds man, and all those several beasts that both feed him and afford him recreation. How doth the earth bring forth herbs, flowers, and fruits, both for medicine and the pleasure of mankind! To pass by the mighty elephant, which the earth breeds and nourisheth, and descend to the least of creatures, how doth the earth afford us a doctrinal example in the little pismire, who, in the Summer provides and lays up her Winter provision, and teaches man to do the like! What, indeed, might not be said in commendation of the earth? that puts limits to the proud and raging sea, and, by that means, preserves both man and beast, that it destroys them not.

The Water is the eldest daughter of the creation, the element upon which the Spirit of God did first move; the element which God commanded to bring forth living creatures abundantly; and without which, those that inhabit the land, even all creatures that have breath in their nostrils, must suddenly return to putrefaction. Moses, the great lawgiver and the chief philosopher, skilled in all the learning of the Egyptians, who was called the friend of God, and knew the mind of the Almighty, names this element the first in the creation. This is the element upon which the Spirit of God did first move, and is the chief ingredient in the creation. Philosophers have made it to comprehend all the other elements.

The water is more productive than the earth. Nay, the earth hath no fruitfulness without showers or dews; for all the herbs, and flowers, and fruit, are produced and thrive by the water; and the very minerals are fed by streams that run under ground, whose natural course carries them to the tops of many high mountains, as we see by several springs breaking forth on the tops of the highest hills.

How advantageous is the sea for our daily traffic, without which we could not subsist! How does it not only furnish us with food and medicine for the body, but with such observations for the mind as ingenious persons would not want! How ignorant had we been of the beauty of Florence, of the monuments, urns, and rarities, that yet remain in, and near unto, old and new Rome; so many, that it is not to be wondered at, that so learned and devout a father as St. Jerome, after his wish to have seen Christ in the flesh, and to have heard St. Paul preach, makes his third wish, *to have seen Rome in her glory*: and that glory is not yet all lost; for what pleasure is it to see the monuments of Livy, the choicest of the historians; of Tully, the best of orators; and to see the bay-trees that grow out of the very tomb of Virgil! These, to any that love learning, must be pleasing. But what pleasure is it to a devout Christian, to see there the humble house in which St. Paul was content to dwell; and how much more doth it please the pious curiosity of a Christian, to see that place on which the blessed Saviour of the world was pleased to humble himself, and to take our nature upon him, and to converse with men! And remember, too, that but for this element of water, the inhabitants of this poor island must have remained ignorant that such things ever were, or that any of them have yet a being.—IZAACK WALTON

USEFUL ARTS. No. XV.

THE OX AND COW.

It is not known with any certainty, whether the various kinds of domesticated cattle of the ox tribe, are only varieties of a common stock, modified by difference of climate and of pasturage, or whether they are sprung from really distinct species. The *auerochs*, or *urus*, now found wild only in the remotest forests of Lithuania and Northern Europe, is supposed to be the prototype of the varieties of that part of the world. If this be the case, domestication has materially reduced the size, however much it may have improved other qualities, for the formidable animal just named, is, in size, but little inferior to an elephant of the average magnitude, while its ferocity and power render it the terror of the districts it frequents. Leaving, however, these questions to the naturalist, it may be worth while to remind our readers, that the common name of Ox, or its synonym in various languages, is equally bestowed on the cattle of our country, and of the rest of Europe; on the small, elegant Indian animal, of the fertile plains of the Ganges, and of that vast peninsula generally; on the Buffalo of Southern Africa; on the Bison of America*, and on the shaggy, small, but strong Musk-Ox, of the frozen zone.

It is, however, certain, that the Buffalo is a distinct species from the Ox and Bison. That England possessed a wild species of Ox long before man inhabited that country, is proved by the fossil remains found in such numerous localities; and, till the commencement of the present century, Wild Oxen were still to be met with in several parts of the north, or of Scotland, which were the last remains of the original stock, before the present breeds had been either introduced from other countries, or had been improved by care and cultivation, and had gradually multiplied and spread over the island. Almost every county now boasts of its peculiar breed, excelling in some points; but generally, the cattle of England have sprung from a mixture of the Dutch, or Holstein, breed, with our own indigenous races, of which that of Lancashire, and the northern counties, is probably the original.

All parts of this animal are made available to some use. This arises from our intimate knowledge of the Ox, and of its structure and character, and from its abundance; since it constitutes the greater part of our animal food. For this last-named purpose, every portion of the flesh is applicable, though the meat of the different parts varies in its properties: that of the Cow is less esteemed than that of the Ox, as being more fibrous and less juicy; but of course, a considerable proportion of the beef sold, is cow-beef. The heart, liver, kidneys, and part of the intestines, called *tripe*, are also eaten; the tongue, salted and smoked, is a favourite dish; the extremities of the feet are employed in preparing jelly. The blood is used in refining sugar†, in the manufacture of Prussian-blue, and in certain cases, as a manure, as are also the bones, broken small, after all the gelatinous part has been extracted for food, by boiling. The hide furnishes us with leather, and the horns, afford materials for three or four different trades; the hair, scraped from the skin by the currier, is used to mix up with mortar, or plaster for covering walls; and the fat and suet are melted for tallow, to make candles.

The Bull, or perfect male, is never eaten, the flesh being too rank and coarse. It is, as the Ox, occasionally used as an animal of draught; but the temper of the bull is, commonly, too uncertain, to allow of its being thus serviceable. The males when full-grown, are called *Oxen*, or *Bullocks*; the young male is termed a *Calf* till it be a year old; the young female, to the third year, is a *Heifer*.

When Oxen are killed for food, a few cuts are made with a knife in the surface of the muscle, to show by the contraction of the fibre which ensues, that the beast was slaughtered, and not left to die of age or disease.

In the year 1830, there was sold at Smithfield Market, 159,907 head of cattle, averaging 800 lbs. gross, or 550 lbs. net weight, each, deducting the hide, offal, bones, &c. This makes an annual consumption in the metropolis of 87,948,850 lbs. of butchers' Beef alone. To this must be added, 2,131,500 lbs. weight of Veal, the net produce of 20,300 calves, averaging 140 lbs. gross, or 105 lbs. net weight, each.

The Ox attains the age of twenty years: the female produces but one at a birth, and goes with young nine months.

* See *Saturday Magazine*, Vol. III., p. 171.

† Ibid. Vol. VII., p. 29.

MILK.

GREAT as are the foregoing advantages derived from the Ox genus, they are far surpassed by the quantity and nutritive qualities of the milk of the Cow; which, in all ages, has formed a considerable part of the food of the human race, in those countries where the animal is found; and which, undoubtedly, was the cause of the original domestication and gradual improvement of the species. As far as we yet know, the Cow and its congeners, are the sole animals which secrete milk in far greater abundance than is required for the support of their offspring; and that this is a property of the animals in a wild state, may be inferred from the large size of the udder, compared with that of other mammalia.

The quantity of milk yielded by the Domestic Cow, varies, of course, with the season, the variety of the animal, and with the nature and abundance of her food; from six to twenty, or even thirty, quarts a day, may be considered as the extremes. The Cows of Alderney‡ are much esteemed for their quality in this respect, and are, generally, the breed kept for the dairy, on large farms. Of our own varieties, the short-horned, Yorkshire breed, furnishes a greater quantity than the Lancashire; a Cow of the former kind, in good condition, and well pastured, will yield twenty-four quarts a day during the grass season. This is the breed which furnishes the milk consumed in London, and other large towns.

Few persons are aware of the number of animals (upwards of 9000, it is said, yielding, 28,800,000 quarts of milk annually,) required to furnish milk sufficient for the consumption of such a city as London, nor of the method by which such a multitude are fed, in enclosed buildings in the immediate neighbourhood of the town, where there cannot be sufficient natural pasturage for more than half of the number. The grains from which beer has been brewed, or spirits distilled, constitute the largest part of the food of the Cow in these situations; turnips, carrots, mangel-wurzel, hay, and oil-cake, are added in small proportions, on different occasions. When the Cows get too old for yielding milk, they are fattened on oil-cake for the butcher.

Cows are usually milked twice a day, morning and evening; but on some farms, the operation is performed at noon also, but the quality of the milk is not so good when this is done. Though the milk of the Cow is that chiefly used for food in Europe, and in this country especially, yet that of the Mare, the Ass, the Ewe, the Goat, and the Camel, is also employed by different nations. The milk, like the blood of all animals, however it may vary in taste according to the food of the creature, agrees in its general chemical and organic composition. It is a white, opaque fluid, heavier than water, of a bland, sweetish taste. When newly taken from the animal, if left to stand, it separates into two parts; a thick, unctuous fluid, called cream, which floats at top, and a thinner, heavier one, below; this is a mere mechanical division, arising from the different specific gravities of the two constituents.

After the lapse of a longer time than that necessary to produce a separation of the cream, a chemical change takes place in milk, whether the cream has been removed or not. The liquid turns *sour*; putrescence comes on by *coagulation*; the milk divides into two distinct substances; thick, soft, white masses, called *curd*, are formed, and float on a thin, serous liquid, termed *whey*. This coagulation can be brought on at any time, by the addition to the milk of any acid, or of certain astringent chemical principles, by alcohol, gelatine, and several other substances. Milk is also capable of the vinous and acetous fermentation.

The ultimate chemical constituents of all milk, are, a fixed oil, albumen, gelatine, a particular sugar, chlorides of sodium and potassium, phosphate of lime, some sulphur, and water. The difference in the milk of different animals arises from the varying proportions of these principles. Cream only differs from the residue of the milk, in containing nearly all the oil; otherwise, the rest of the constituents also concur to form this fluid. The *curd* consists almost entirely of the albumen. It is the facility with which these separations are effected, that gave rise to the processes for manufacturing the two important products obtained from milk, namely, *Butter* and *Cheese*.

BUTTER.

As soon as the milk is taken from the animal, it is carried to the dairy, or building expressly devoted to this purpose.

‡ See *Saturday Magazine*, Vol. VII., p. 47

The milk is strained through fine hair-cloth sieves, to separate any impurities, or hairs of the cow, which may have got into it, and is received into shallow pans of earthenware, or into troughs of wood, iron, marble, slate, &c., according to the size of the dairy and the fancy of the proprietor. Coolness, and excessive cleanliness, are the essential requisites in every part of the processes in which milk is employed. Those vessels, therefore, which most easily admit of being thoroughly cleaned, are the best, whatever may be their form or material: leaden lining to wooden ones is objectionable, however, for the same reason that renders that metal unfit for any other purpose connected with food,—the poisonous quality of the salts formed by dissolving lead in acids.

The milk is left to stand quite still for from six to twelve hours, according to circumstances. The cream, which has by that time risen to the surface, is carefully skimmed off from the milk; and when a sufficient quantity is obtained, it is put into the *churn*. Cream may be kept there three or four days before it is churned; a slight degree of sourness being neither injurious to the making of butter, nor unpleasant to the taste of it.

The churn is a closed vessel, in which the cream being put, a fan, or piston, is moved round inside, to agitate the liquid violently, in order to produce the separation of the oily from the serous part of the cream. There are many varieties of churns: those represented in the annexed figure are now the most common. In the right hand churn, the axle carrying the fans passes horizontally through the barrel, and is made to revolve by means of a toothed wheel at its end, which is worked by another on the axle of the fly-wheel, this being turned by the handle fixed on its spoke. The axle of the fans of the other vertical churn, has a small cylinder on the outside, above the top of the tub, round which cylinder a cord is wound; this cord passes through two holes in the sides of the frame, which carries one end to the axle, and the ends of the cord are fastened to a treadle-board, the form of which will be understood from the figure. The churning stands on this board, and by alternately throwing his weight on each flap of it, he draws down the cord alternately on each side, and causes the axle and fans to turn backwards and forwards in the tub.



CHURNS.

The time required to convert the cream into butter, varies at different seasons of the year, from one to three hours, the butter setting sooner in warm than in cold weather: the best temperature for the purpose is about 55°. In Winter it is necessary to bring the churn near a fire, to obtain sufficient warmth; and in hot weather, if its form admits of it, the churn should be placed in a tub, with

cold water in it, or some means adopted to cool the churn down to the proper temperature.

It is found by experience, also, that the motion of the fans, or piston, in churning, should be regular, and of a certain velocity; and that if this be not attended to, or if the churn be worked carelessly, the process will fail. When the butter is set, it is taken from the churn, and the residue, or *butter-milk*, drawn off; nor should this be neglected for an hour, for if this butter-milk were left, and began to turn sour in the churn, it would impart a smell to the wood which would spoil any cream that might afterwards be put into the vessel. It is absolutely necessary, for the same reason, to wash out, and *scald* the churn, and all vessels whatever, in which milk is put, every time they are used; a very small quantity of putrescent milk imbibed by the wood, or left in an earthenware vessel, being capable of acting as a *leaven*, to bring on the putrefactive fermentation, in any fresh milk exposed to its influence.

The butter is next pressed, and worked by wooden beaters, to get out all the butter-milk which it may still contain; for if any of this were left in the cavities, it would quickly cause the butter to become rancid. The wooden tray on which this process is performed, has its surface well rubbed over with salt, and a small quantity of salt is worked up with the butter, even when it is to be used as fresh butter.

It is considered as injurious to the quality of the butter, to wash it in cold water, or to put it in water to keep it cool. The vessel in which it is kept ought to be immersed in that liquid, but the water should not be allowed to touch the butter itself; and this should not be handled, if possible, during any stage of the process.

Butter is *salted* by well incorporating with it nitre and common salt, to which many persons add a proportion of sugar. Butter for sale is forced closely into wooden casks, which must be made air-tight by filling in the chinks with melted butter, so that when covered down, all air may be excluded.

In many farms, it is usual to put the milk at once into the churn, without separating the cream; by this means more butter is obtained, but the labour is considerably increased. In hot countries, butter is generally in a fluid state: in India it is obtained from the milk of buffaloes, and is called *ghee*.

In England, butter is only made from the milk of the cow; but all milk will yield butter by the same mode of treatment.

In London, the consumption of butter is estimated at one pound and a half weekly, for each individual of the population, which, when added to that required for ships and other purposes, gives an annual consumption of 47,040,000 lbs; 280,000 cows would be required to furnish this quantity.

It is a curious fact, that by far the greater part of those minute insects which suddenly fly into our eyes when walking or riding, are of the same genus (*Staphylinus*), if not the same species (*Staphylinus brachypterus*), devoured by swallows. Most persons may have noticed, in the Summer season, a disagreeable-looking insect, running rather briskly across a sand or gravel walk, which, if touched or disturbed, immediately throws up its tail, from whence project two formidable-looking spines. It appears to have no wings, but it is provided, nevertheless, with a pair, most beautifully folded up beneath two little short wing-cases; still, however, these wings are disproportioned to the size of the insect; and we may, therefore, reasonably conclude, that it is by no means so active on the wing, as others with a larger expansion; and, consequently, unable so adroitly to guide itself, and avoid danger; which may account, at the same time, for its being more readily seized by the swallows, and also for its being carried headlong into the eye, if the eye happens to be in the line of its accidental course. Those who have experienced the annoyance of these minute intruders, will well remember the extreme pain felt, as soon as the eye closes upon its prisoner: this is occasioned by the irritation produced, when the insect, as in the case of its larger representative on the gravel walk, on being caught, instantly darts, up its tail, covered with similar sharp and fork-like appendages.—STANLEY'S *Familiar History of Birds*.

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